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General Aviation and 10 Things About the U.S. Airline Industry That Likely Makes You Crazy

State Board of Transportation
Intermodal Committee

Atlanta, GA
February 17, 2016

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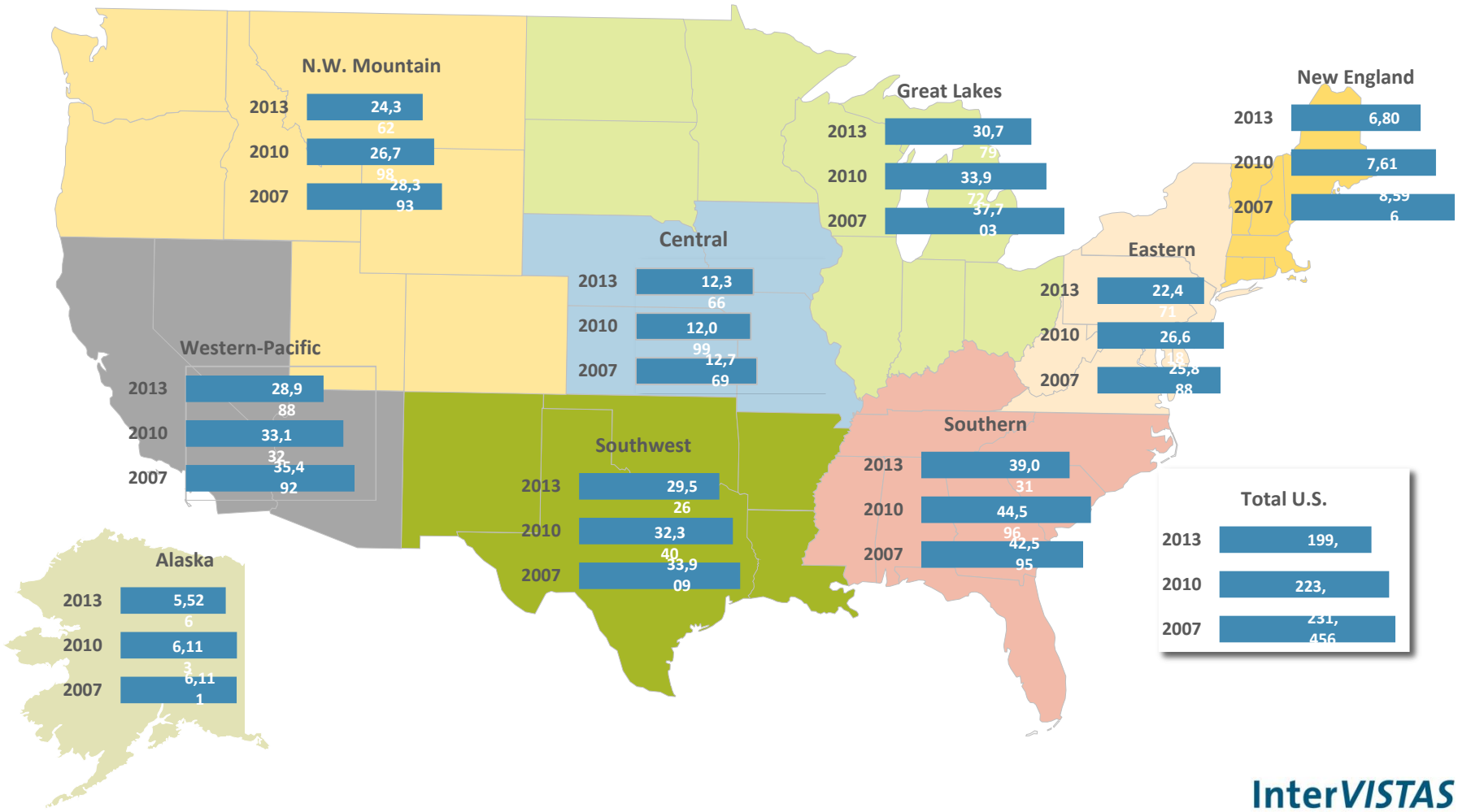
GENERAL AVIATION METRICS

Number of Active General Aviation Aircraft and On-Demand Part 135 in the U.S. by Region



Source: GAMA 2014 Databook.

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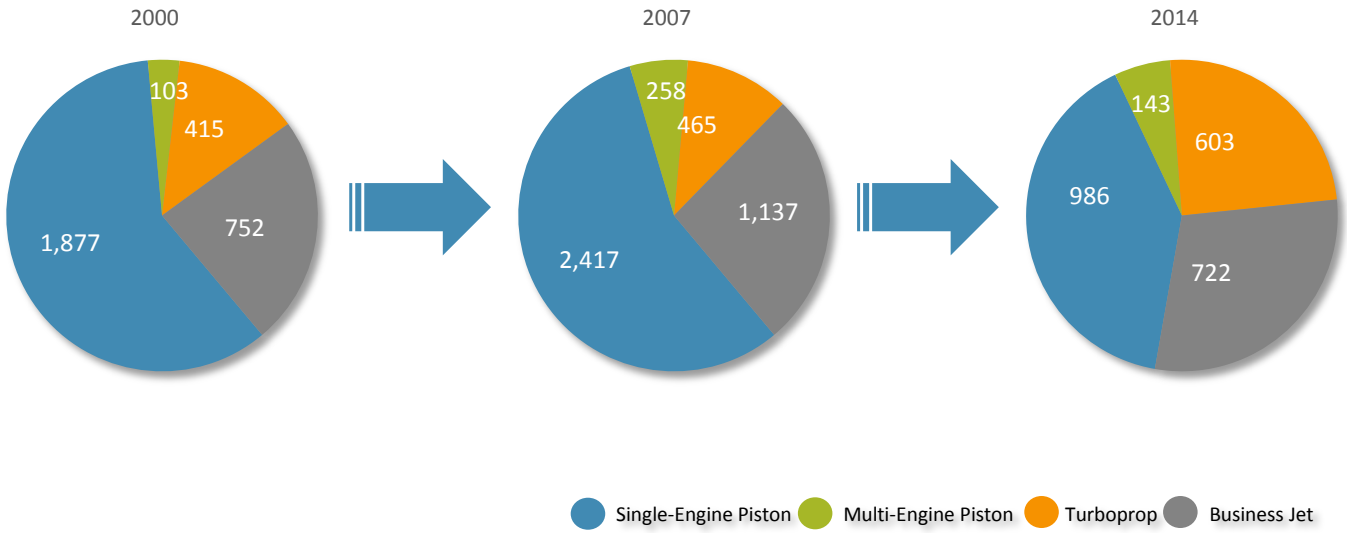
General Aviation Airplane Shipments by Type of Airplane Manufactured Worldwide



Source: GAMA 2014 Databook.

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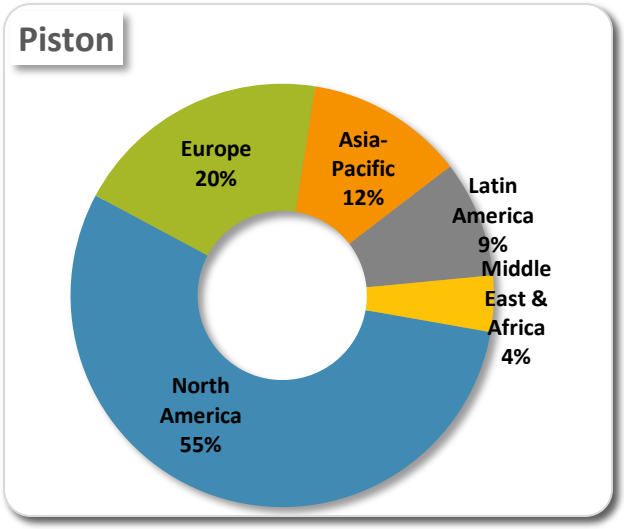
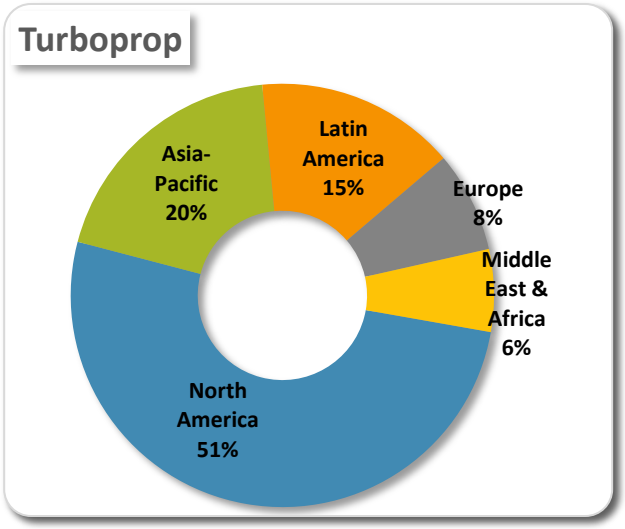
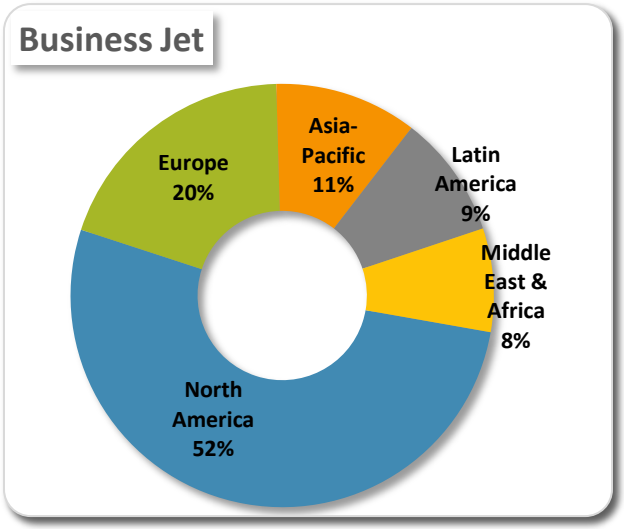
Customer Delivery Region for General Aviation Airplane Shipments by Type of Airplane Manufactured Worldwide – Share of Total 2014







Source: GAMA 2014 Databook.

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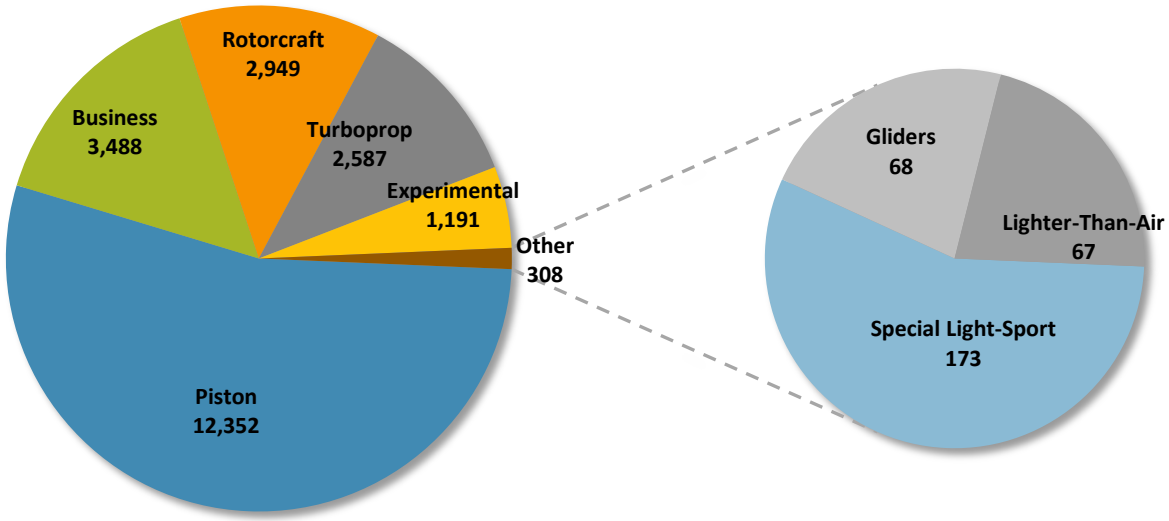
Total Hours Flown by General Aviation Airplane Type
(in thousands)



Source: GAMA 2014 Databook.

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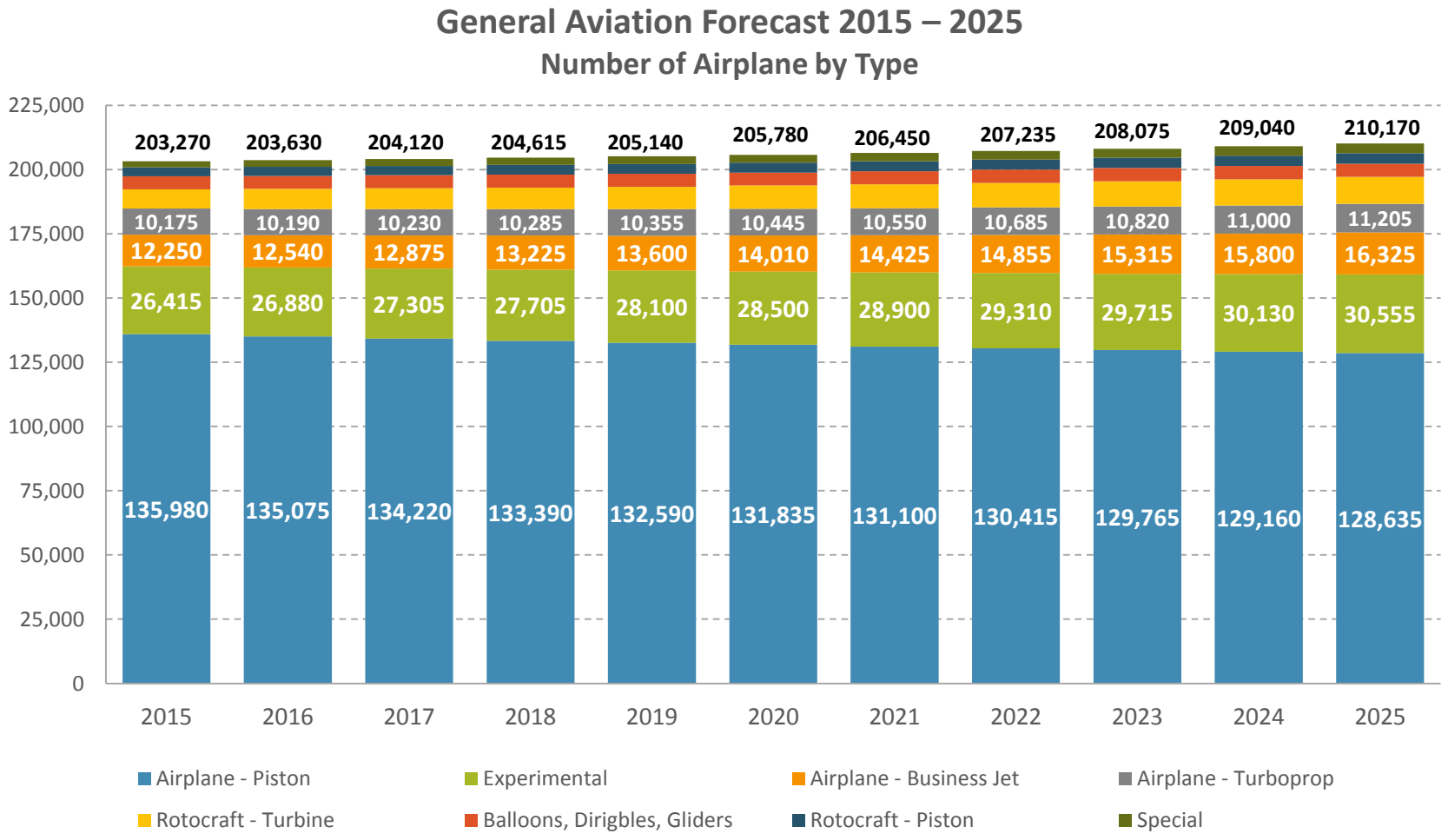
U.S. General Aviation Fuel Consumption, 2000 – 2013

Millions of Gallon

	Airplane				Rotorcraft		Experimental and Other Aircraft		Total Fuel Consumed		
Year	Single-Engine Piston	Multi-Engine Piston	Turboprop	Business Jet	Piston	Turbine		Light-Sport	Avgas	Jet Fuel	Total
2000	201	108	176	737	8	59	15	-	333	972	**1,305**
2001	180	76	149	727	7	43	15	-	279	918	**1,198**
2002	178	74	152	746	7	41	18	-	277	938	**1,215**
2003	182	67	155	729	7	49	17	-	272	932	**1,205**
2004	168	80	167	1,005	8	59	18	-	273	1,231	**1,504**
2005	173	90	196	1,181	15	149	18	-	295	1,527	**1,822**
2006	165	80	190	1,304	17	149	22	0	283	1,643	**1,926**
2007	158	83	205	1,148	9	132	23	1	274	1,486	**1,759**
2008	143	70	230	1,313	11	162	23	2	248	1,706	**1,954**
2009	132	57	209	1,105	11	134	26	1	227	1,447	**1,674**
2010	133	54	187	1,123	11	125	22	2	221	1,435	**1,656**
2011E	129	53	188	1,182	11	121	21	2	216	1,491	**1,706**
2012	127	52	191	1,232	11	120	22	2	212	1,542	**1,755**
2013E	122	54	208	1,057	11	149	16	1	202	1,413	**1,616**

Source: GAMA 2014 Databook.

General Aviation Aircraft Forecast



Source: GAMA 2014 Databook.

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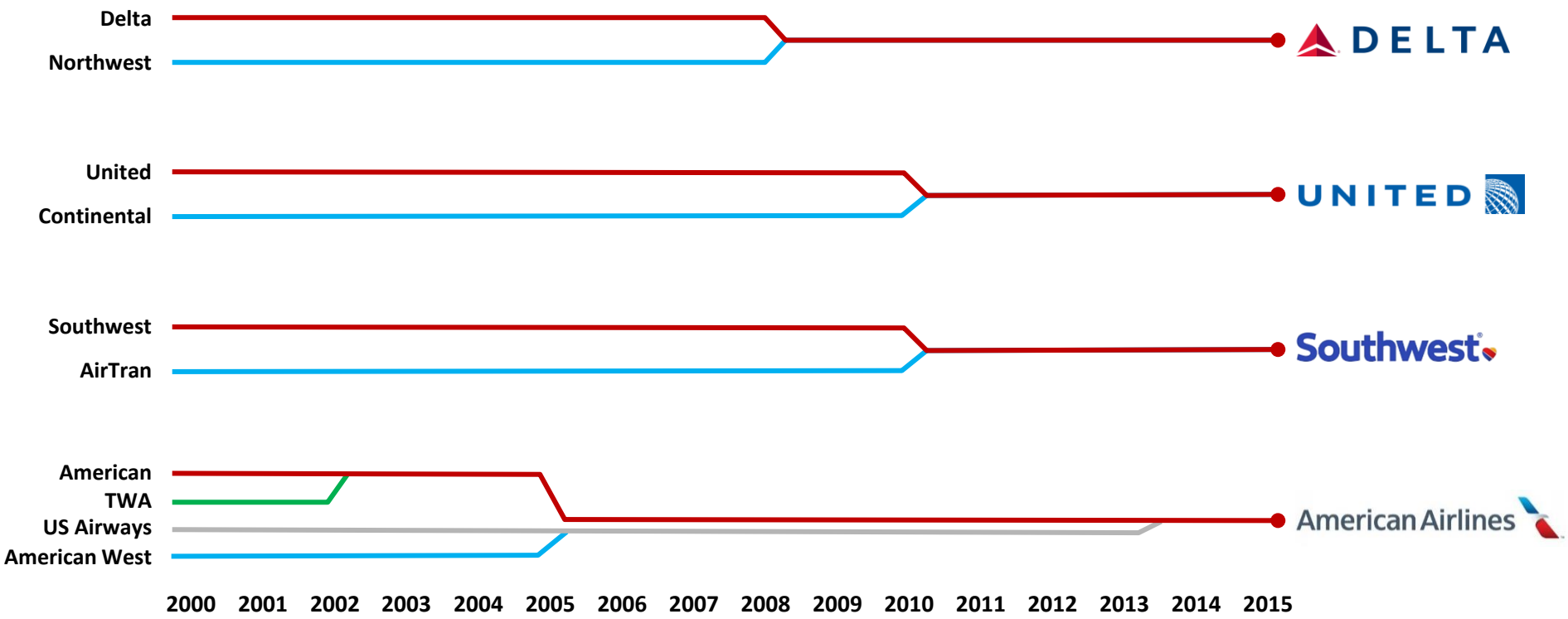
1. CONSOLIDATION: SHOULD I BE UPSET WITH THE AIRLINES OR WITH THE REGULATORS IN WASHINGTON?

Today the Big 4 U.S. Airlines Hold 80% of the Domestic Market



Source: Innovata schedules, InterVISTAS analysis, based on ASMs.

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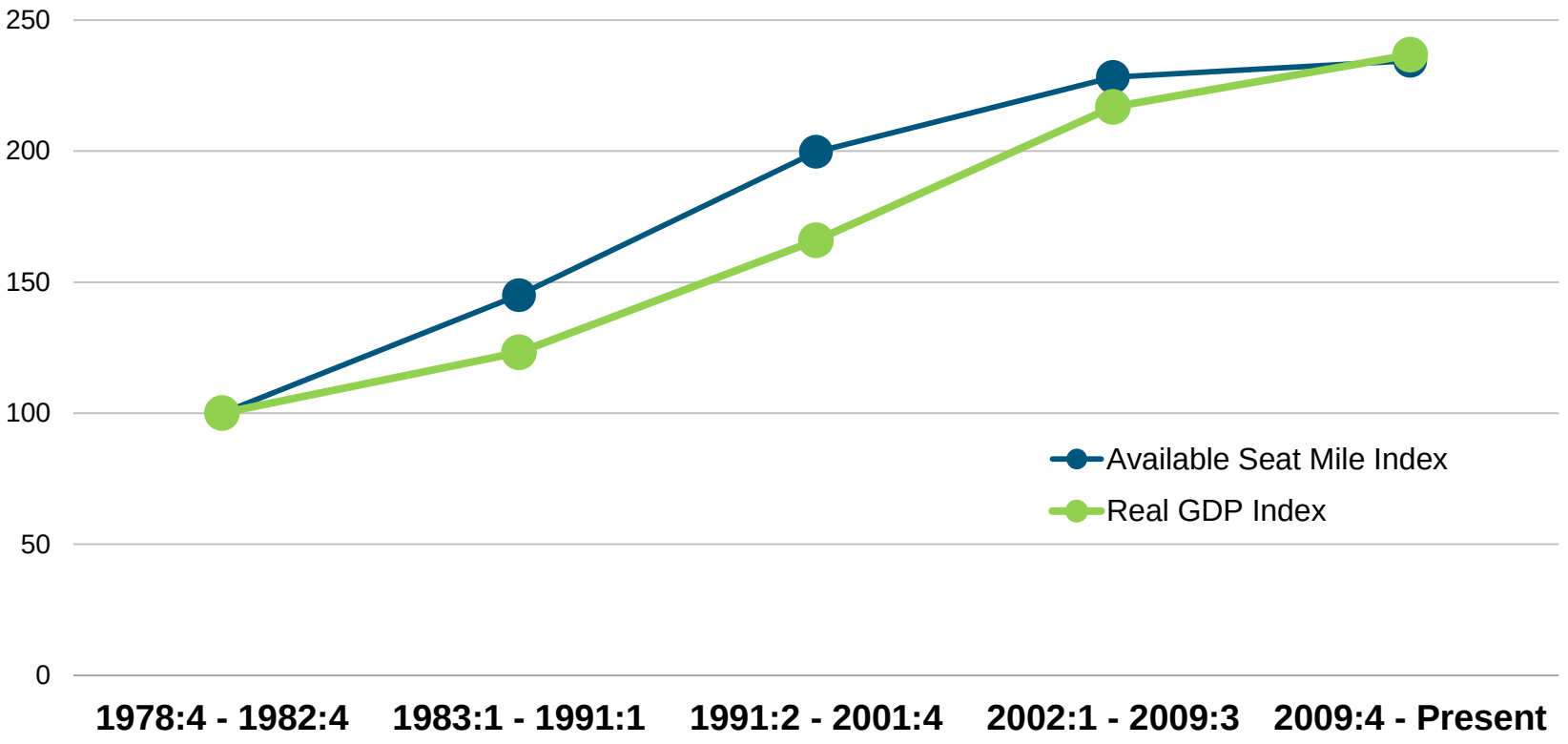
2. CAPACITY DISCIPLINE: SHOULD I BE UPSET WITH THE AIRLINES OR WALL STREET?

Capacity Grows Faster Than Real GDP: An Industry That Grew Too Big



Note: SAAR, 2009 Chained Dollars
Note: Business cycle 1 = 100

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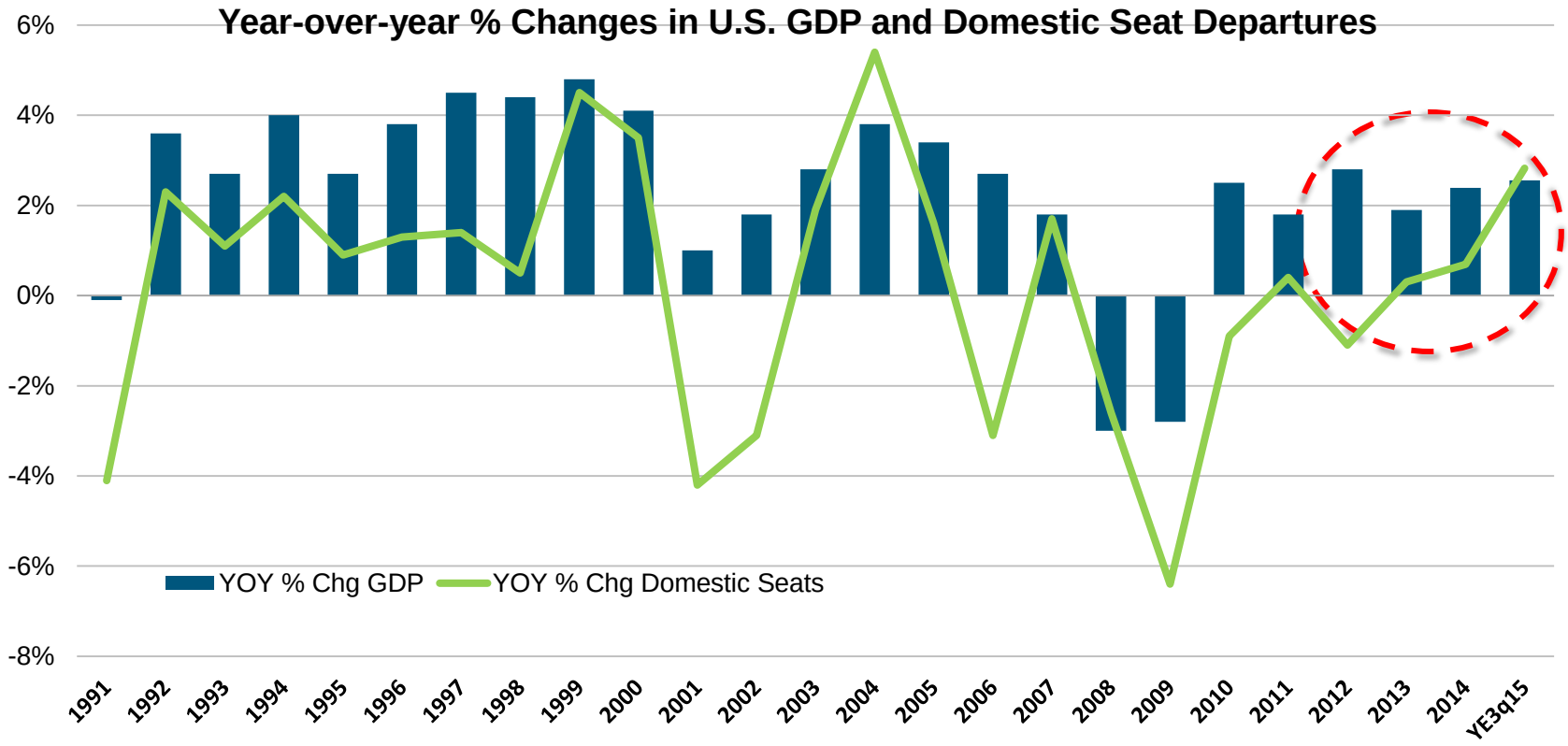
The Ultimate Frustration for Communities of All Sizes: Strategy of Capacity Discipline

- Represents a recent shift in airline strategy; typically, airlines grow capacity in times of domestic economic growth.



Source: US DOT T-100 database, via Diio online portal. BEA

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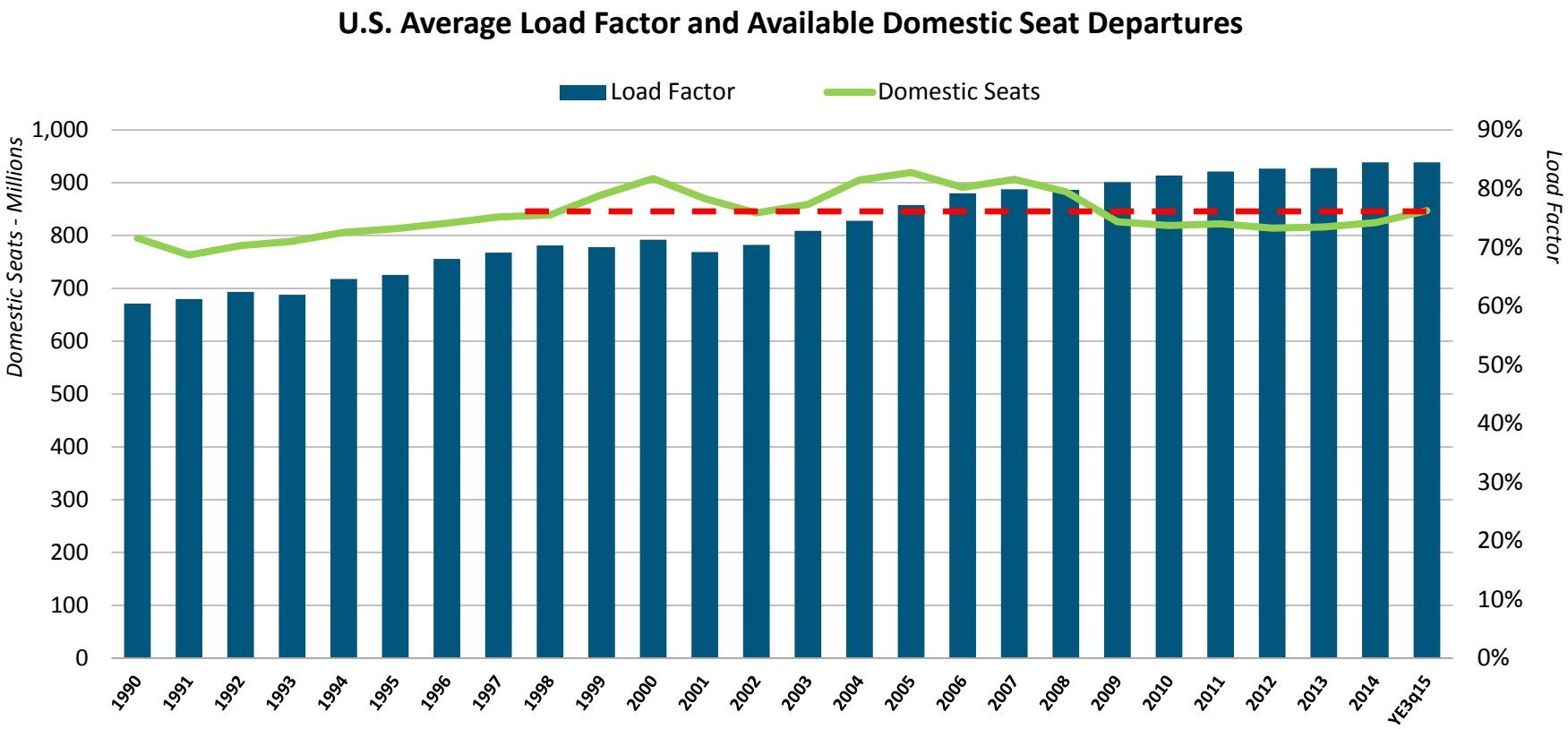
Available Domestic Seats Are At Their Lowest Level Since 1998

- Capacity discipline and schedule rationalization has wiped out nearly 100 million domestic seats.



Source: US DOT T-100 database, via Diio online portal

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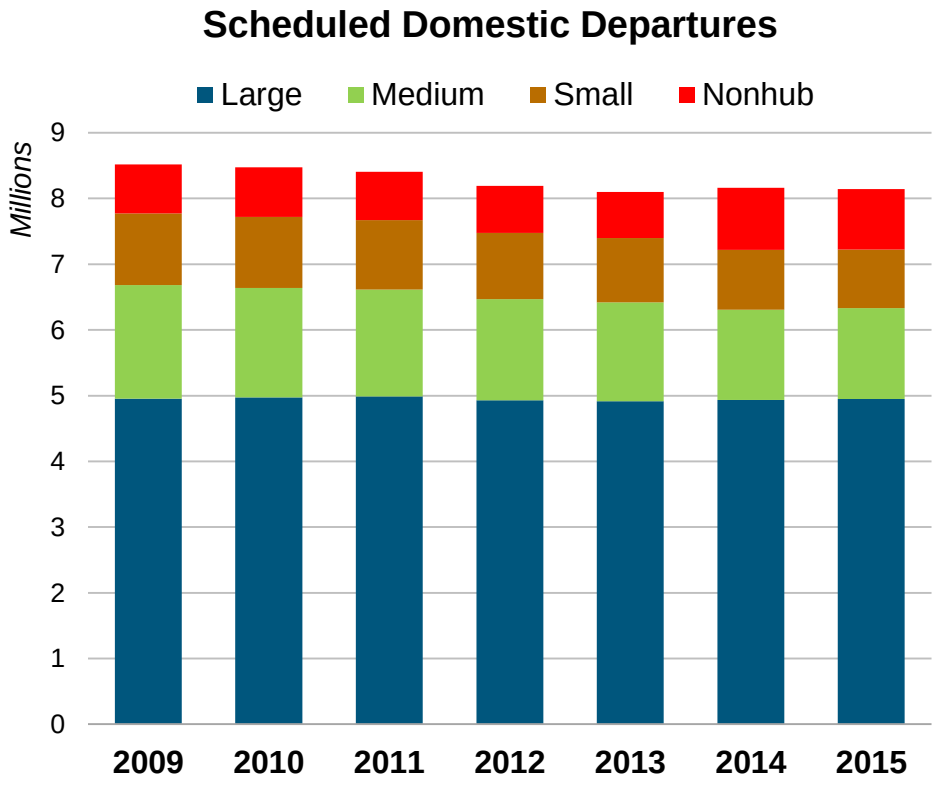
However, Smaller Airports Are Still Seeing Service Cuts

- Will capacity growth return? Signs suggest maybe.



Airport Type	% change in domestic flights ('14-'15)	% change in domestic seats ('14-'15)
Large Hub	0.3%	4.0%
Medium Hub	1.0%	4.4%
Small Hub	-2.7%	-0.1%
Non-Hub and EAS	-2.2%	-0.3%
All Smaller Airports	-2.5%	-0.2%
All Airports	-0.2%	3.5%

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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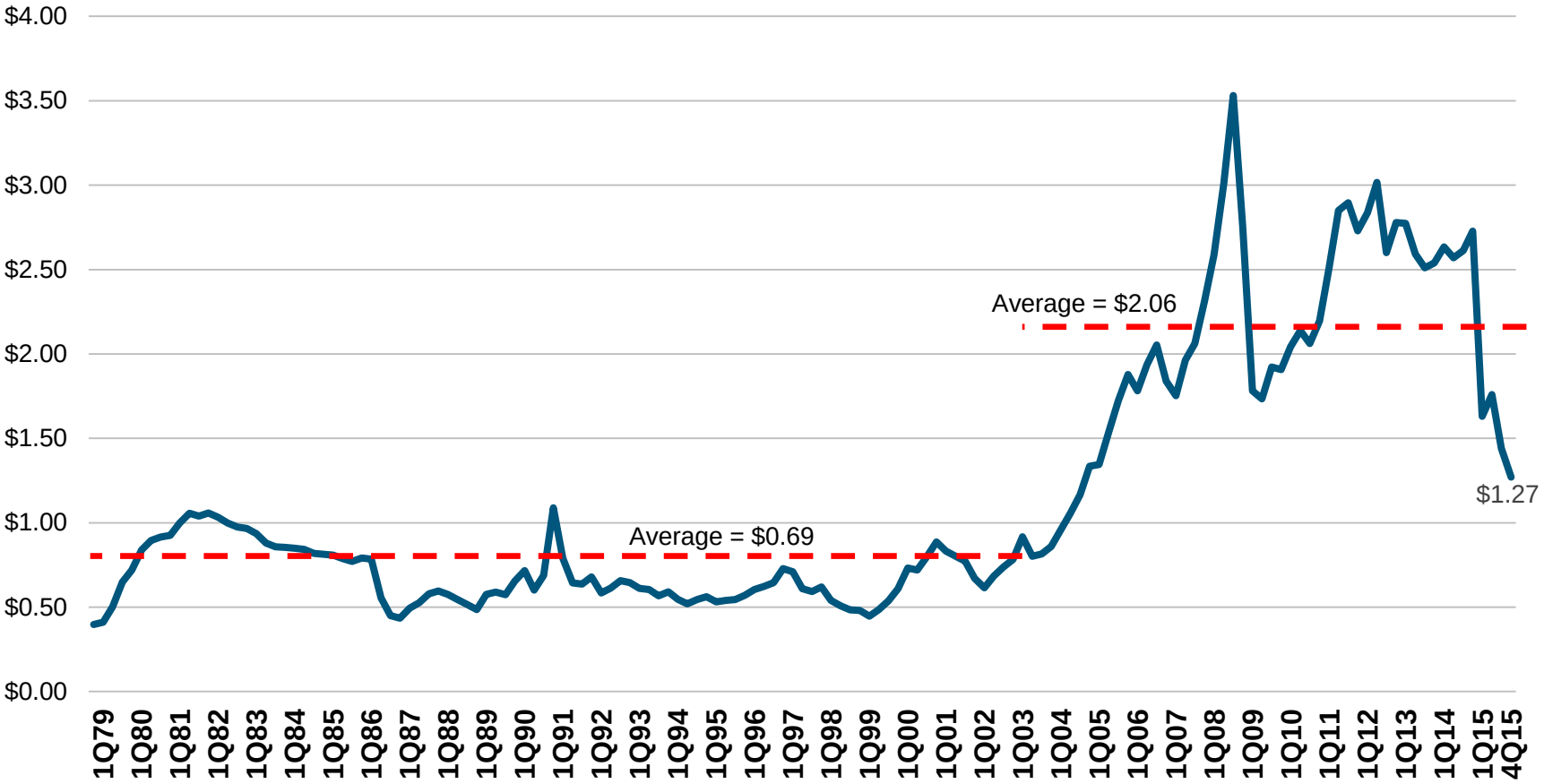
3. FUEL: BROUGHT YOU ANCILLARY FEES, CAPACITY DISCIPLINE AND MADE SMALL JETS UNECONOMIC

Jet Fuel Price per Gallon – Consumers Are Seeing Some Benefit…….



Source:

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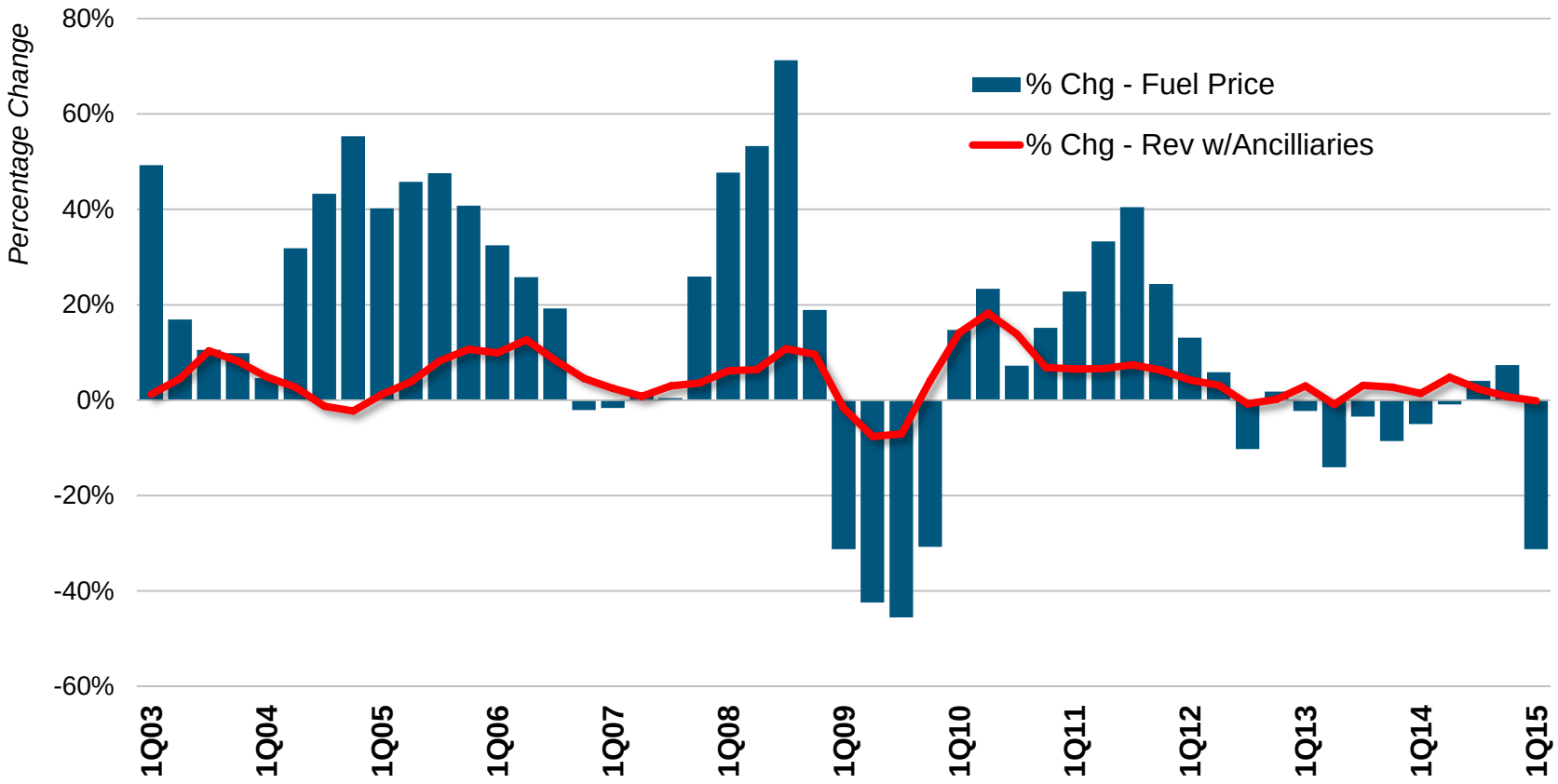
…..But Less Than In The Past Given Volatility In The Price Of Oil



Source:

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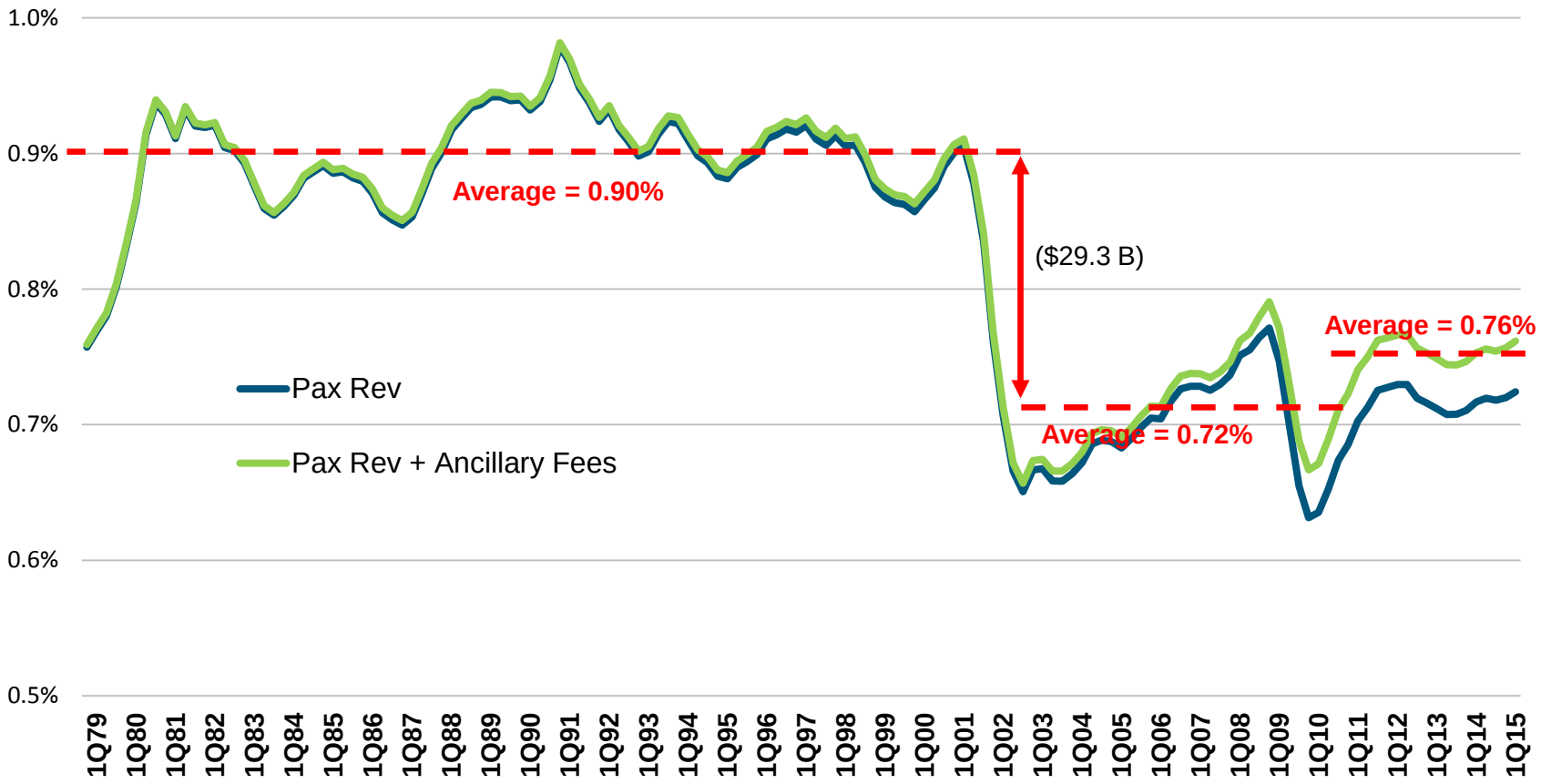
4. FARES: OFTEN DISCUSSED – RARELY UNDERSTOOD

Passenger Revenue and Ancillary Fees As A Percent Of Gross Domestic Product



Source:

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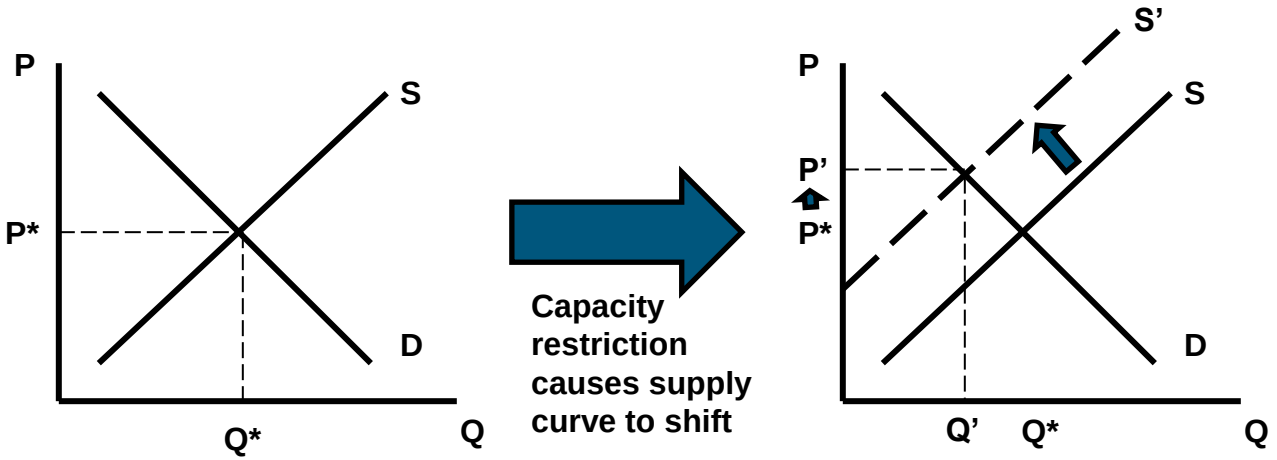
Why Should Capacity Discipline Increase Airfares?

- Economic theory would suggest that airfares would rise as a result of reductions in capacity, assuming demand for air travel stays constant.

Supply and Demand for Air Transportation



- Indeed, many airports have seen increases in average fare in the last several years.

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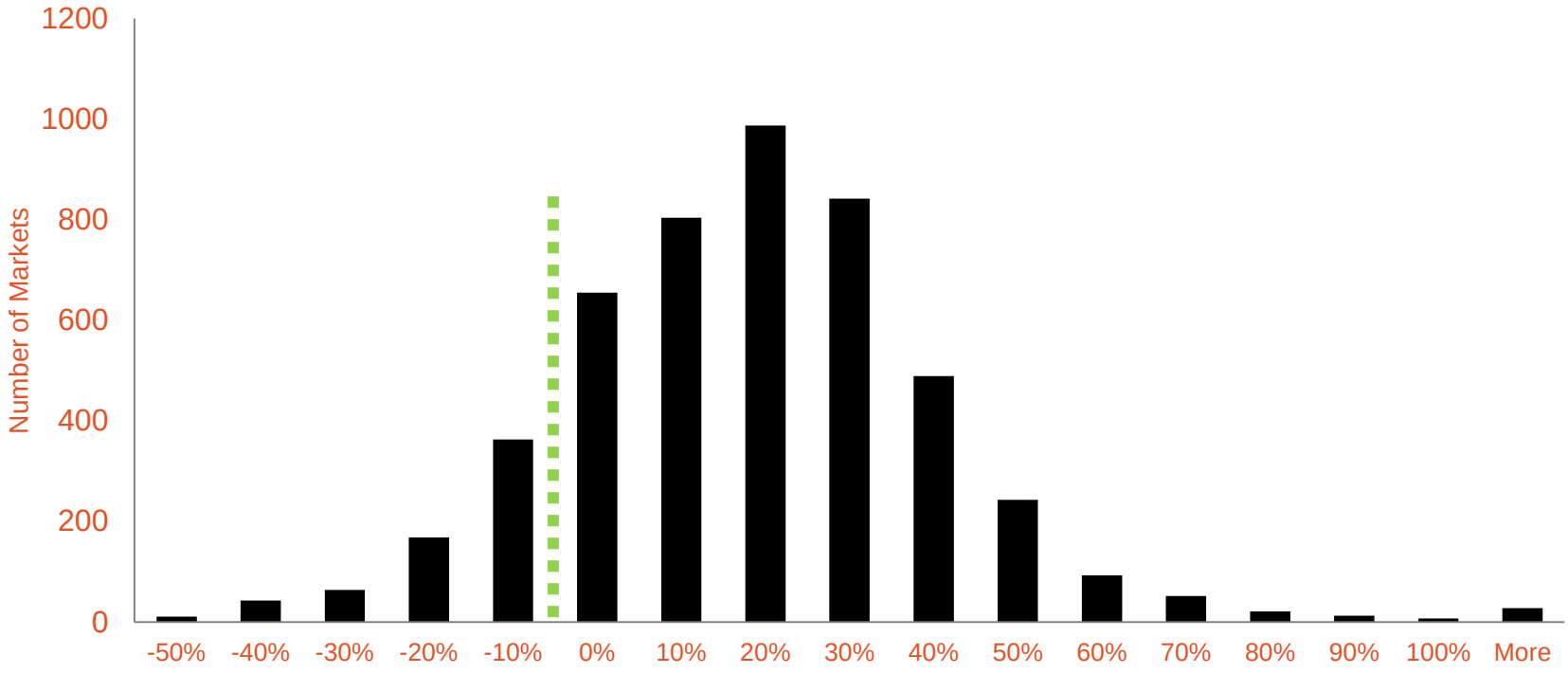
The Majority of Large Markets Saw Fare Increases in the Last Five Years

- Nearly 79% of the top 5,000 domestic O&D markets in YE3q 2015 saw an increase in gross fares from 2010 levels.

Histogram of Percent Change in Average Gross Fares for Top 5,000 O&D Markets, 2010 - YE3q 2015



Source: U.S. DOT DB1B O&D Survey via Diio Mi

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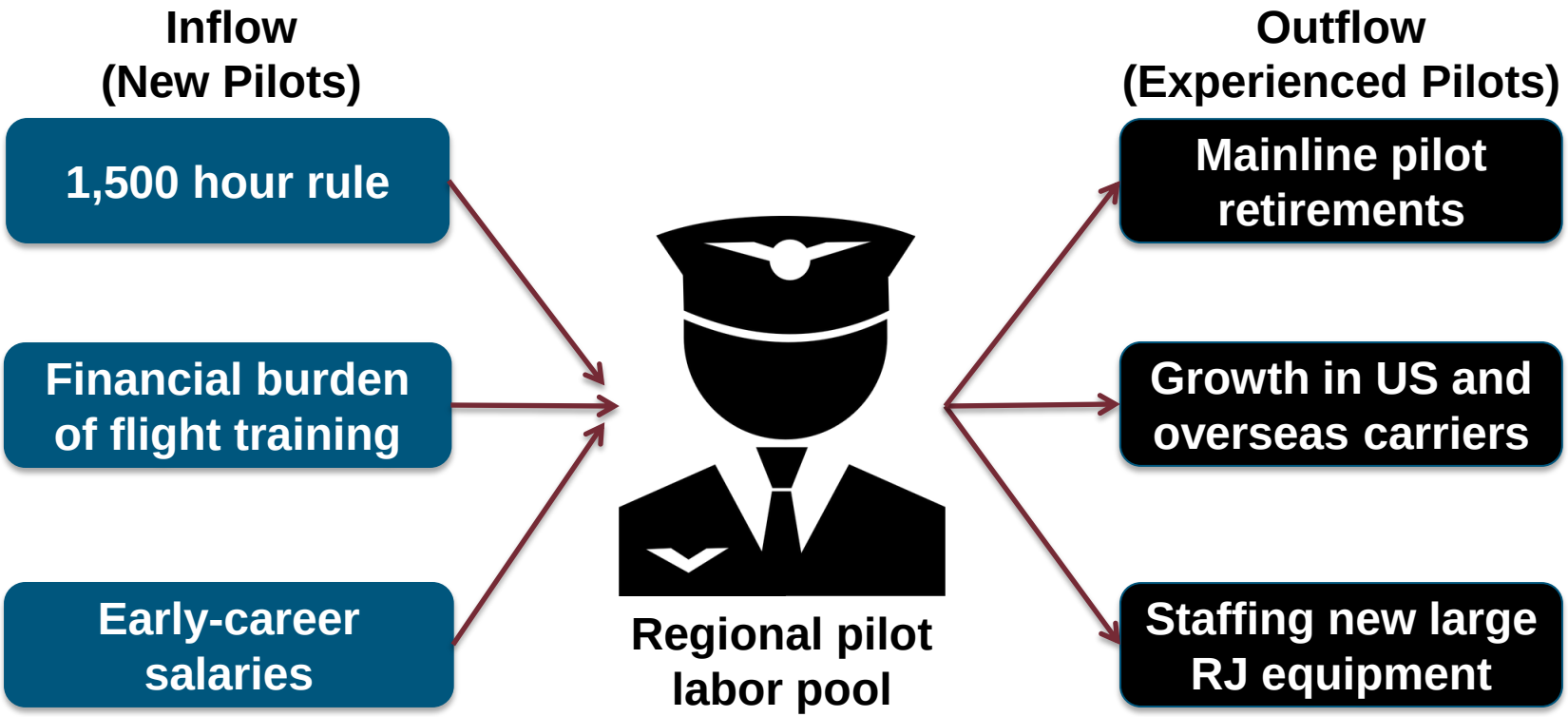
5. PILOT SUPPLY: WHO IS TO BLAME – AIRLINES, LABOR OR GOVERNMENT?

Understanding the Forces Shaping the Problem

Retirements and New Equipment Will Put a Strain on Labor Supply

- The pool of regional jet pilots is affected by demand-side and supply-side pressures:



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Understanding the Scope of the Problem

Retirements and New Equipment Will Put a Strain on Labor Supply

- Between now and 2022, the Big 3 US airlines will retire 14,200 pilots that need to be replaced just to maintain the network being flown today
- Today, the regional industry has 225 70-seat aircraft on order that will also need to be staffed
  - As an example, the industry will need to park 423 smaller units just to staff the larger equipment

- Regulatory issues have already impacted the pilot supply from expanding to the degree necessary to respond to these pressures

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A CRITICAL ASSUMPTION IN THE ANALYSIS:

THE REGIONAL SECTOR WILL BE THE SOLE SUPPLIER OF PILOT LABOR AND REMAINS RELATIVELY FIXED OVER TIME

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Limiting Pilot Supply Could Lead To Disastrous Effects -- All communities would feel the effects as the regional industry shrinks

- Suppose that the regional pilot labor force in 2014 stayed fixed over time.
  - Not an outrageous assumption, considering the new 1500-hour rule that is making it impossible for carriers to fill new classes.
- Based on replacement of retiring pilots at the mainline and aircraft being delivered to the regional industry:
  - By 2017, all turboprop aircraft would likely be retired along with more small jets
  - Remaining small jets likely to be retired by 2020
  - By 2022, the regional industry would be but 20 percent of its 2014 self

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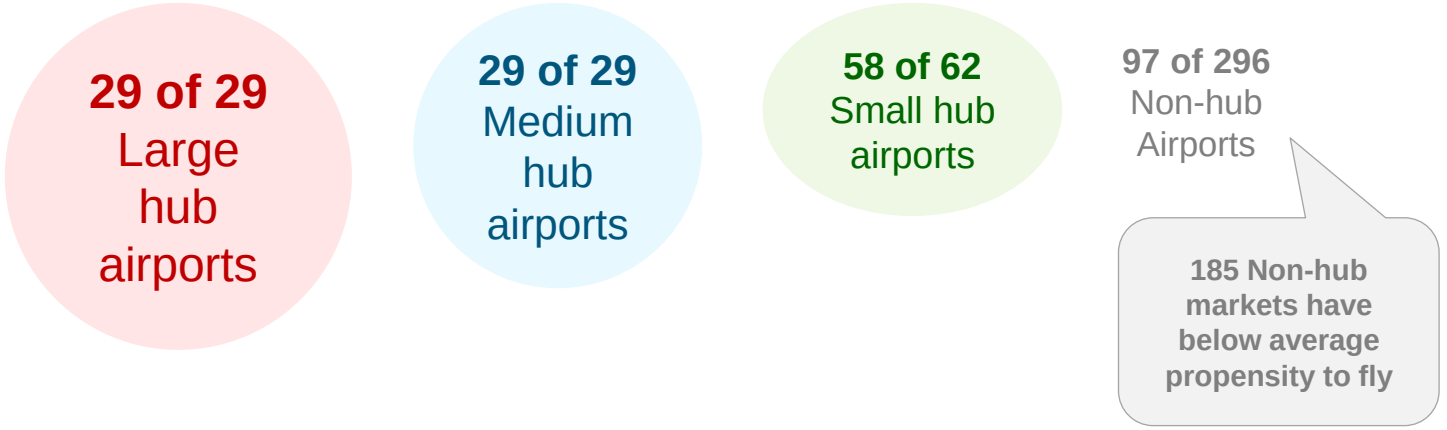
6. IF AIRPLANES ARE GETTING BIGGER, CAN ALL COMMUNITIES SUPPORT THE SERVICE?

Only 155 of 358 (43%) of Small and Non-Hub Airports Are Supporting 70-Seat Service Today



Note: Only 22 Non-hub airports with below average propensity to fly have 70-seat service today

Note: Hub size based on FAA definition.

Source: Innovata schedules, via Diio online portal.

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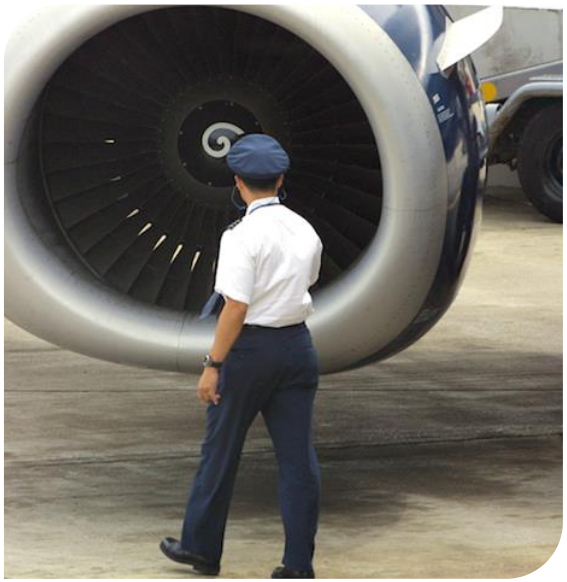
Conclusions

- Nobody is excited today as it is only frequency cuts and not market exits
- 2015 marks the first year where it will difficult to replace lost seats at the historical level….and it only gets harder
- Fear is that 150-200 markets likely have insufficient traffic or population to support larger jet service



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7. LOOKING AT THE STATES WITH THE MOST ROUTES, FREQUENCIES AND SEATS ADDED

There Is An Airline Story Where New Routes Are Being Added

2007 - 2016

State	August 2007	August 2016	Absolute Change
Florida	439	536	97
Texas	458	503	45
Illinois	245	275	30
North Carolina	186	206	20
Hawaii	76	88	12
North Dakota	20	32	12
South Carolina	67	78	11
Oregon	77	87	10
Washington	127	137	10
Colorado	180	189	9
Iowa	34	42	8
Maryland	65	72	7
Indiana	61	67	6
Wyoming	20	22	2
New Jersey	99	100	1
Arizona	141	141	0
South Dakota	24	24	0
Montana	70	69	-1
Kentucky	42	40	-2
Nebraska	38	36	-2
Vermont	14	12	-2

2015 - 2016

State	August 2015	August 2016	Absolute Change
Florida	519	536	17
Hawaii	74	88	14
Arizona	134	141	7
California	430	437	7
Colorado	185	189	4
Indiana	64	67	3
Iowa	39	42	3
New York	256	259	3
North Carolina	203	206	3
Oregon	84	87	3
Texas	500	503	3
Kentucky	38	40	2
Nebraska	34	36	2
Nevada	131	133	2
Georgia	184	185	1
Idaho	36	37	1
Missouri	122	123	1
Wisconsin	60	61	1
Connecticut	26	26	0
Louisiana	62	62	0
Maine	23	23	0

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

The Health Of Local Economies And Airline Strategies Explain Everything In Terms of Departures Deployed

2007 - 2016

State	August 2007	August 2016	Percentage Change
North Dakota	1,452	1,989	37.0%
Washington	20,051	21,515	7.3%
North Carolina	30,956	30,905	-0.2%
Minnesota	18,475	17,657	-4.4%
Louisiana	7,361	7,034	-4.4%
New Jersey	14,826	14,164	-4.5%
Illinois	48,004	45,811	-4.6%
Maryland	10,640	9,903	-6.9%
Oregon	11,179	10,243	-8.4%
Georgia	42,145	38,050	-9.7%
Massachusetts	20,969	18,923	-9.8%
Colorado	29,613	26,686	-9.9%
Hawaii	15,633	14,081	-9.9%
Texas	76,673	68,015	-11.3%
Florida	50,417	44,614	-11.5%
California	83,035	72,715	-12.4%
Virginia	31,876	27,575	-13.5%
Michigan	23,749	20,438	-13.9%
South Carolina	6,705	5,738	-14.4%
New York	45,453	38,620	-15.0%
Maine	2,758	2,332	-15.4%

2015 - 2016

State	August 2015	August 2016	Percentage Change
Hawaii	12,064	14,081	16.7%
Nebraska	2,680	2,902	8.3%
Idaho	2,646	2,855	7.9%
Wisconsin	5,916	6,373	7.7%
Colorado	24,862	26,686	7.3%
Missouri	13,048	13,951	6.9%
Indiana	5,881	6,287	6.9%
Maryland	9,272	9,903	6.8%
Oregon	9,611	10,243	6.6%
Iowa	2,867	3,032	5.8%
Minnesota	16,724	17,657	5.6%
California	68,903	72,715	5.5%
Michigan	19,413	20,438	5.3%
Florida	42,530	44,614	4.9%
Arkansas	3,028	3,174	4.8%
Connecticut	2,716	2,840	4.6%
Ohio	15,306	15,954	4.2%
Utah	10,133	10,558	4.2%
Nevada	15,325	15,928	3.9%
Tennessee	10,896	11,319	3.9%
New York	37,178	38,620	3.9%

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

……The Same Is True For Seats Deployed

2007 - 2016

State	August 2007	August 2016	Percentage Change
North Dakota	88,497	125,365	41.7%
Washington	2,044,242	2,643,829	29.3%
Louisiana	592,439	730,417	23.3%
Massachusetts	1,492,358	1,766,955	18.4%
Oregon	984,782	1,154,853	17.3%
North Carolina	2,665,983	3,051,262	14.5%
South Carolina	445,170	495,910	11.4%
Colorado	2,867,883	3,144,941	9.7%
Georgia	4,569,728	4,993,684	9.3%
Minnesota	1,872,411	2,043,344	9.1%
Maryland	1,312,374	1,390,672	6.0%
California	9,310,895	9,822,491	5.5%
Texas	7,715,351	7,946,529	3.0%
Florida	6,063,659	6,220,015	2.6%
Montana	242,964	245,283	1.0%
Illinois	4,830,046	4,855,394	0.5%
New Jersey	1,494,281	1,494,461	0.0%
Iowa	202,664	199,526	-1.5%
Indiana	580,572	571,082	-1.6%
Maine	152,743	149,827	-1.9%
Nebraska	287,167	279,746	-2.6%

2015 - 2016

State	August 2015	August 2016	Percentage Change
Nebraska	243,741	279,746	14.8%
Colorado	2,797,948	3,144,941	12.4%
Missouri	1,338,247	1,501,912	12.2%
Wisconsin	537,885	596,307	10.9%
Connecticut	288,991	320,177	10.8%
Tennessee	1,005,206	1,106,737	10.1%
Idaho	224,226	245,616	9.5%
Maryland	1,272,348	1,390,672	9.3%
Louisiana	669,113	730,417	9.2%
Oregon	1,064,289	1,154,853	8.5%
Florida	5,745,431	6,220,015	8.3%
Minnesota	1,887,465	2,043,344	8.3%
California	9,105,423	9,822,491	7.9%
Rhode Island	182,974	196,761	7.5%
Indiana	533,160	571,082	7.1%
Washington	2,468,889	2,643,829	7.1%
Massachusetts	1,654,803	1,766,955	6.8%
Utah	1,129,762	1,202,473	6.4%
Michigan	1,906,256	2,023,601	6.2%
Georgia	4,706,193	4,993,684	6.1%
North Carolina	2,895,254	3,051,262	5.4%

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

8. BENCHMARKING GEORGIA'S AIRPORTS

Passenger Traffic Is Up At Georgia Airports – In Stark Contrast To Many States

- Both Atlanta and all other airports in Georgia saw their traffic grow by 5.0%

Passenger Enplanements at Iowa Airports, 2013 - YE3Q2015

Airport			Enplanements			Percent Change	
Name	Code	Hub Type	2013	2014	YE Oct 2015	2014 v. 2013	YE Oct 2015 v. 2014
Atlanta	ATL	Large	40,560,432	41,640,868	43,714,673	2.66%	4.98%
Savannah	SAV	Small	800,563	934,200	977,803	16.69%	4.67%
Augusta, GA	AGS	Nonhub	262,030	266,611	275,652	1.75%	3.39%
Columbus, GA	CSG	Nonhub	50,938	43,241	42,519	-15.11%	-1.67%
Valdosta, GA	VLD	Nonhub	36,760	35,799	39,325	-2.61%	9.85%
Albany, GA	ABY	Nonhub	31,040	31,268	33,991	0.73%	8.71%
Brunswick, GA	BQK	Nonhub	32,288	32,577	33,552	0.90%	2.99%

Source: US DOT T-100 database, Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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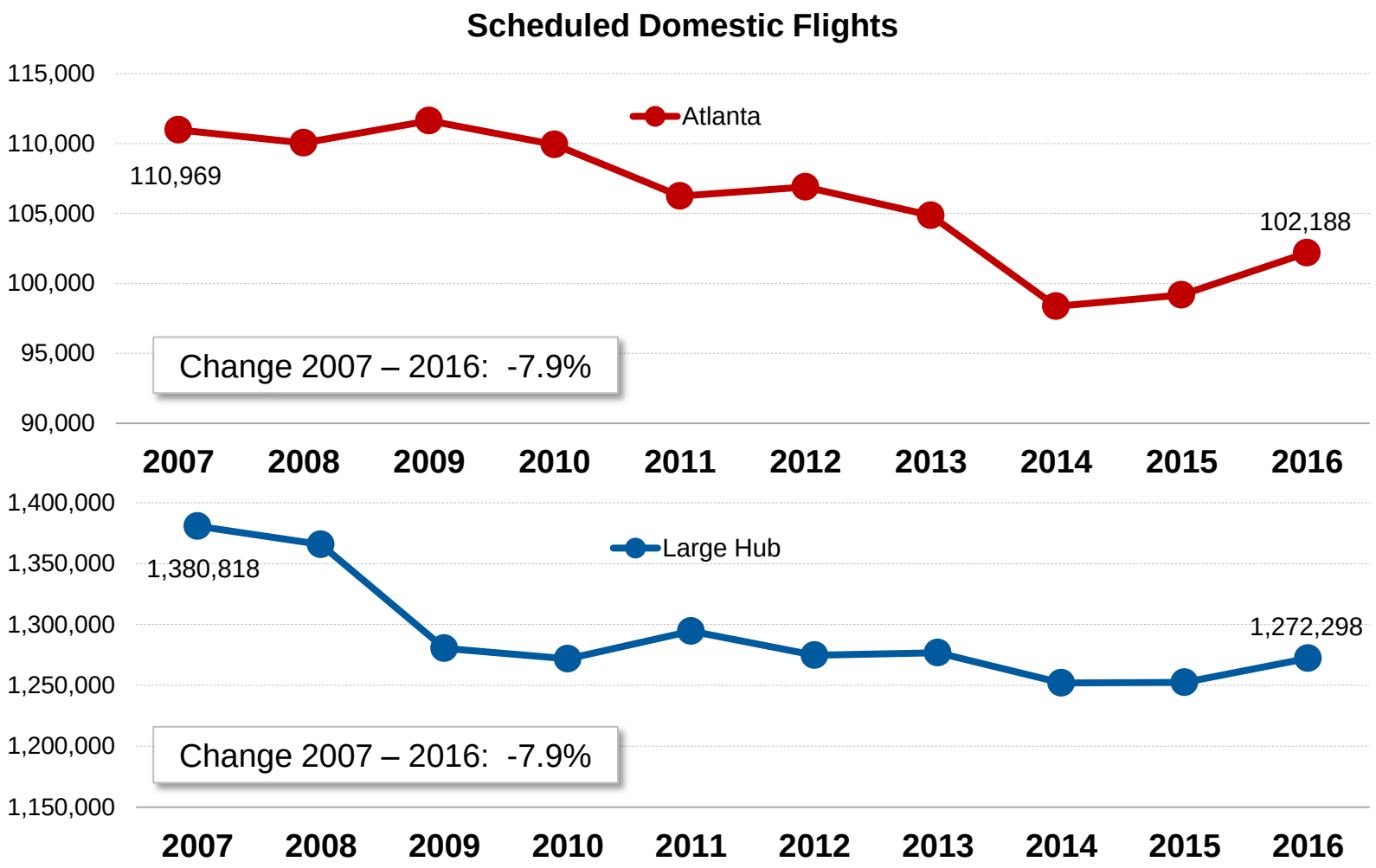
Trends At Atlanta Mirrored The Large Hubs In The US



Note: 2nd quarter schedules only.

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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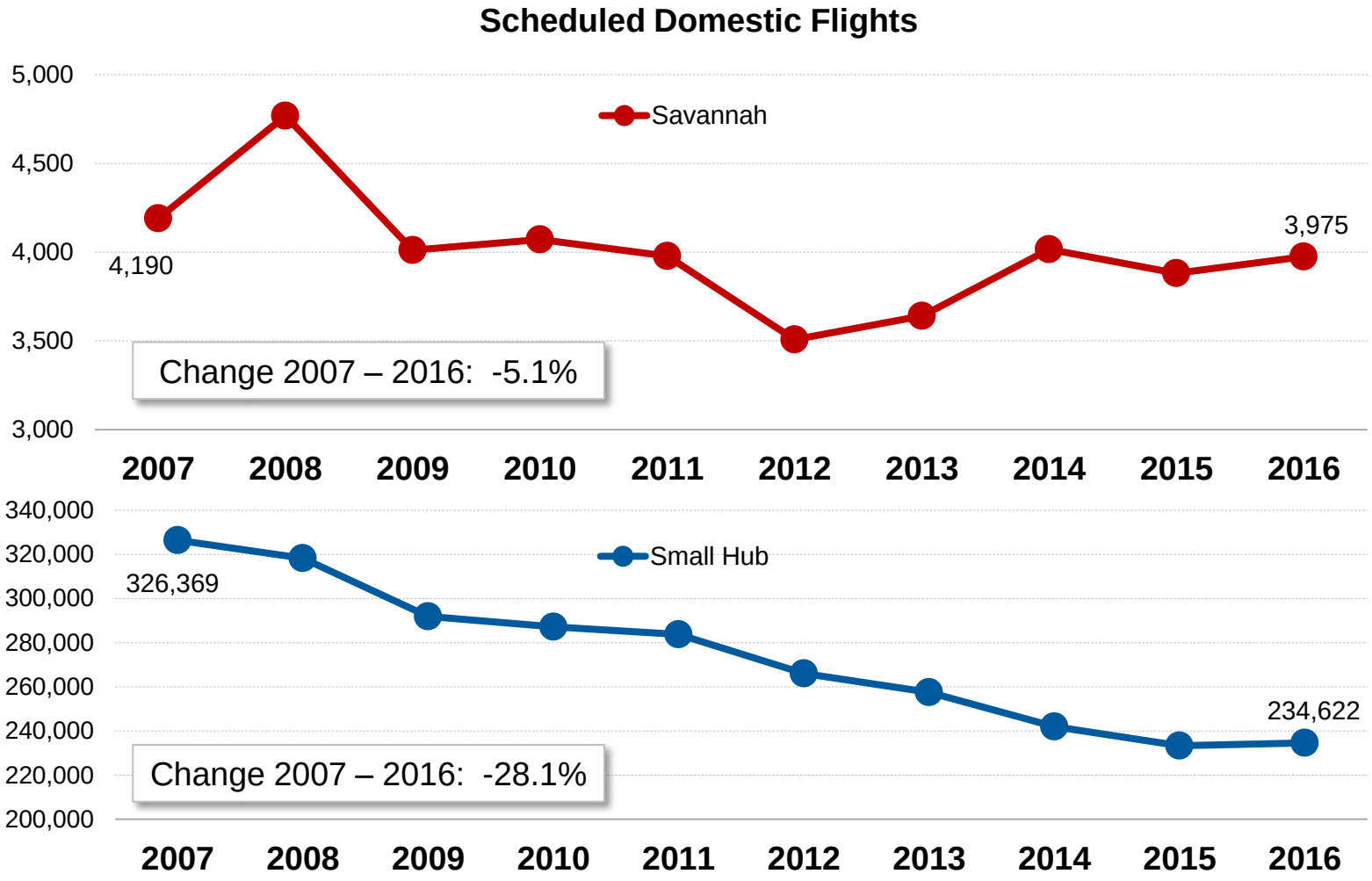
Savannah Has Fared Well Versus U.S. Small Hubs



Note: 2nd quarter schedules only.

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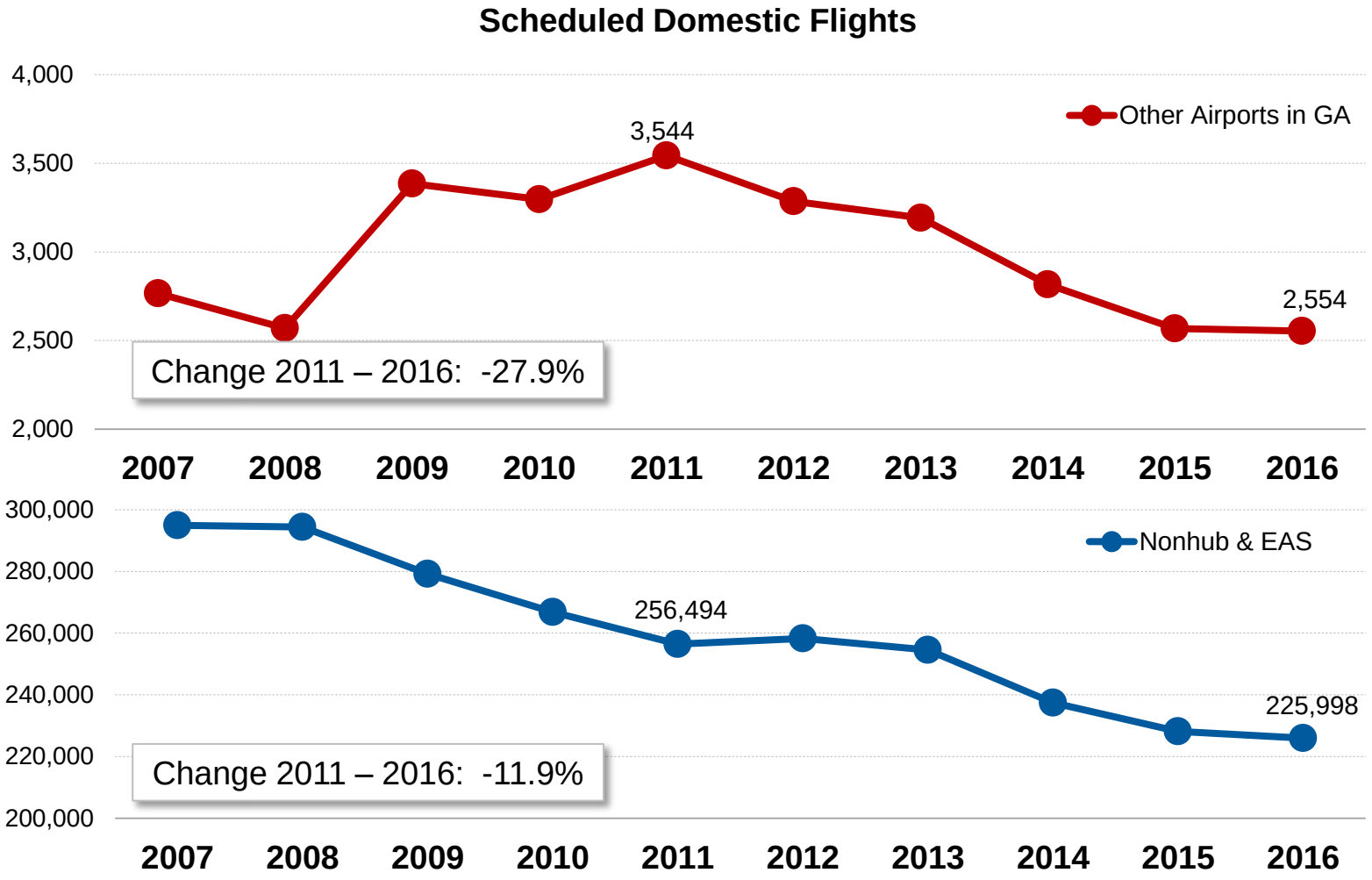
Georgia's Nonhub Airports Have Struggled



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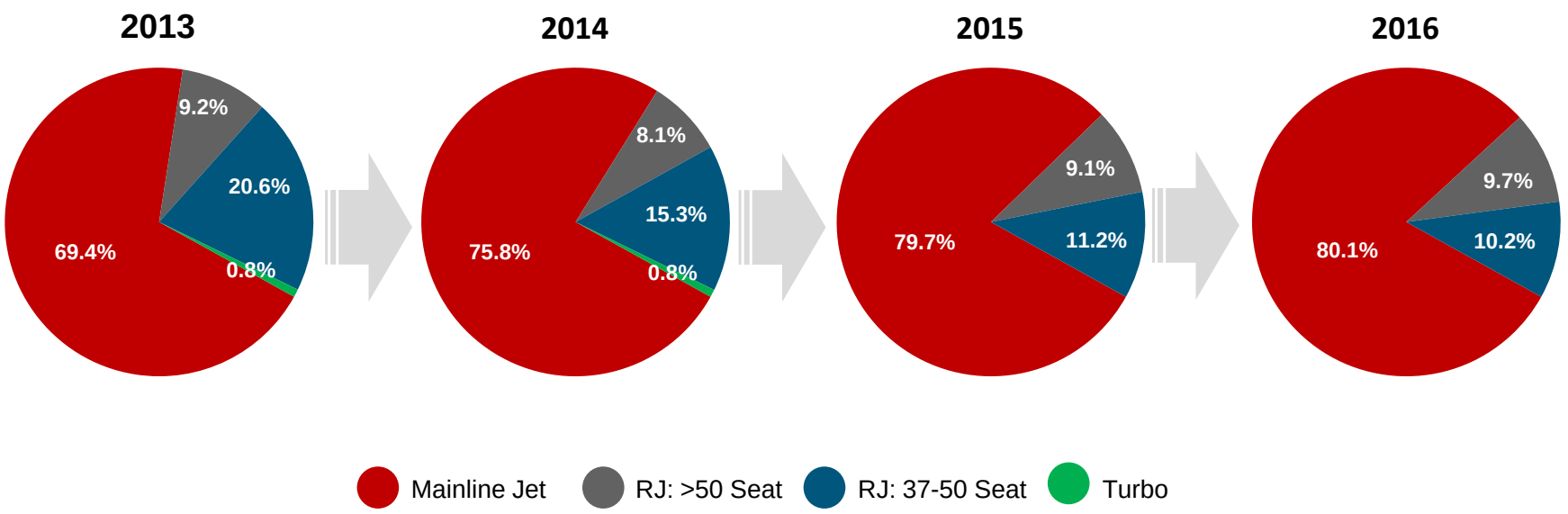
Unlike Most Hubs In The U.S., Nearly 90 Percent of ATLs Departures Are On Mainline and Large RJ Aircraft

- During 2013 – 2016, the seats per departure at Atlanta went from 122 to 134, growth of 9.6%

Share of Departures by Equipment Type at Atlanta – Domestic Only



Note: Figure is based on 2nd quarter schedules of each year.

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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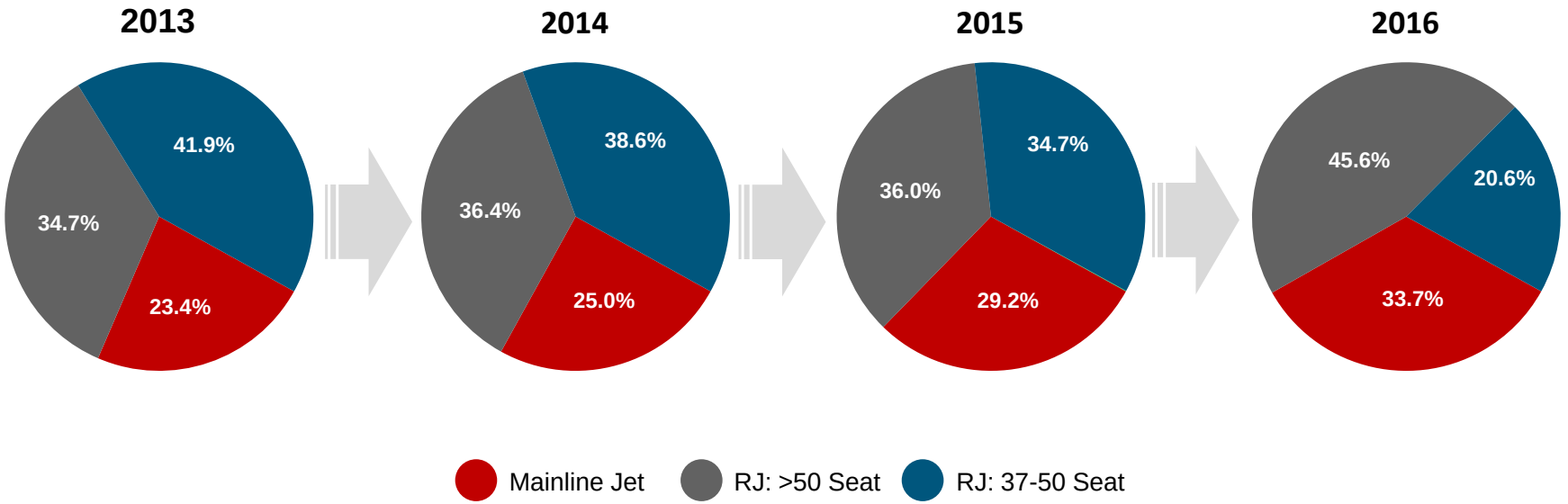
Nearly 80 Percent Of SAV Departures Are Now On Large RJ And Mainline Aircraft – Vast Improvement

- In 2016 Mainline Jet and Large RJ have a combined share of 79%, up from 58% in 2013

Share of Departures by Equipment Type at Savannah – Domestic Only



Note: Figure is based on 2nd quarter schedules of each year.

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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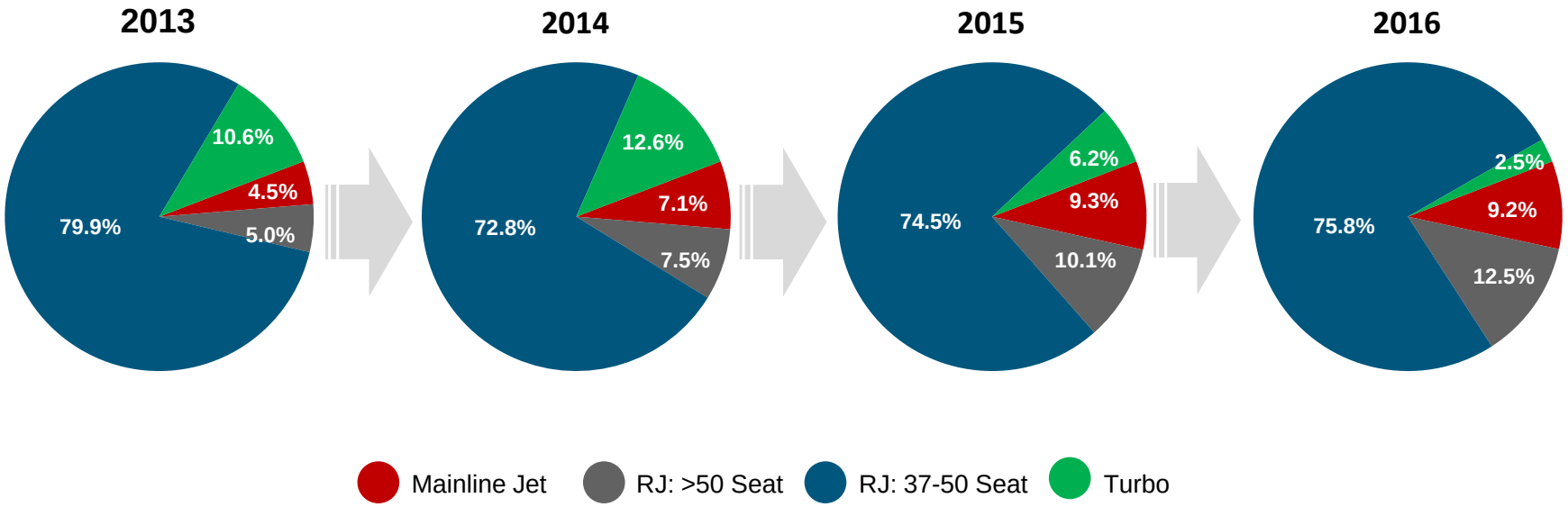
Like Other States, Georgia's Nonhub Airports Are Heavily Reliant on Small RJs For Their Service

- Most of the turbo aircraft have been replaced by larger equipment – The share of large RJ & mainline jet have both doubled since 2013

Share of Departures by Equipment Type at all other GA Airports – Domestic Only



Note: Figure is based on 2nd quarter schedules of each year.

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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Benchmarking Georgia's Commercial Air Service Airports: Carriers and Nonstop Routes Flown

			Number of Carriers			Absolute Change		Nonstop Routes			Absolute Change	
Code	Airport Name	Hub Size	Aug'07	Aug'15	Aug'16	Aug'16 v. Aug'07	Aug'16 v. Aug'15	Aug'07	Aug'15	Aug'16	Aug'16 v. Aug'07	Aug'16 v. Aug'15
ATL	Atlanta	Large	10	7	7	-3	0	177	158	159	-18	1
SAV	Savannah	Small	7	6	5	-2	-1	16	17	20	4	3
AGS	Augusta, GA	Nonhub	2	2	2	0	0	2	2	2	0	0
CSG	Columbus, GA	Nonhub	1	1	1	0	0	1	1	1	0	0
VLD	Valdosta	Nonhub	1	1	1	0	0	1	1	1	0	0
ABY	Albany, GA	Nonhub	1	1	1	0	0	1	1	1	0	0
BQK	Brunswick	Nonhub	1	1	1	0	0	1	1	1	0	0
Total/Average – All Georgia Airports			**3**	**3**	**3**	**-1**	**0**	**2,206**	**2,196**	**2,201**	**-5**	**5**

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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Benchmarking Georgia's Commercial Air Service Airports: Scheduled Departures And Seats Flown

			Scheduled Departures			Percent Change		Scheduled Seats			Percent Change	
Code	Airport Name	Hub Size	Aug'07	Aug'15	Aug'16	Aug'16 v. Aug'07	Aug'16 v. Aug'15	Aug'07	Aug'15	Aug'16	Aug'16 v. Aug'07	Aug'16 v. Aug'15
ATL	Atlanta	Large	39,707	34,527	35,903	-9.6%	4.0%	4,408,203	4,554,111	4,835,005	9.7%	6.2%
SAV	Savannah	Small	1,487	1,299	1,323	-11.0%	1.8%	119,262	107,791	112,592	-5.6%	4.5%
AGS	Augusta, GA	Nonhub	379	424	445	17.4%	5.0%	17,399	26,411	27,137	56.0%	2.7%
CSG	Columbus, GA	Nonhub	119	102	112	-5.9%	9.8%	5,740	5,100	5,600	-2.4%	9.8%
VLD	Valdosta	Nonhub	89	87	89	0.0%	2.3%	4,310	4,350	4,450	3.2%	2.3%
ABY	Albany, GA	Nonhub	120	80	89	-25.8%	11.3%	4,800	4,000	4,450	-7.3%	11.3%
BQK	Brunswick	Nonhub	93	80	89	-4.3%	11.3%	4,020	4,000	4,450	10.7%	11.3%
Total/Average – All Georgia Airports			**44,001**	**38,614**	**40,066**	**-8.9%**	**3.8%**	**4,565,741**	**4,707,778**	**4,995,700**	**9.4%**	**6.1%**

Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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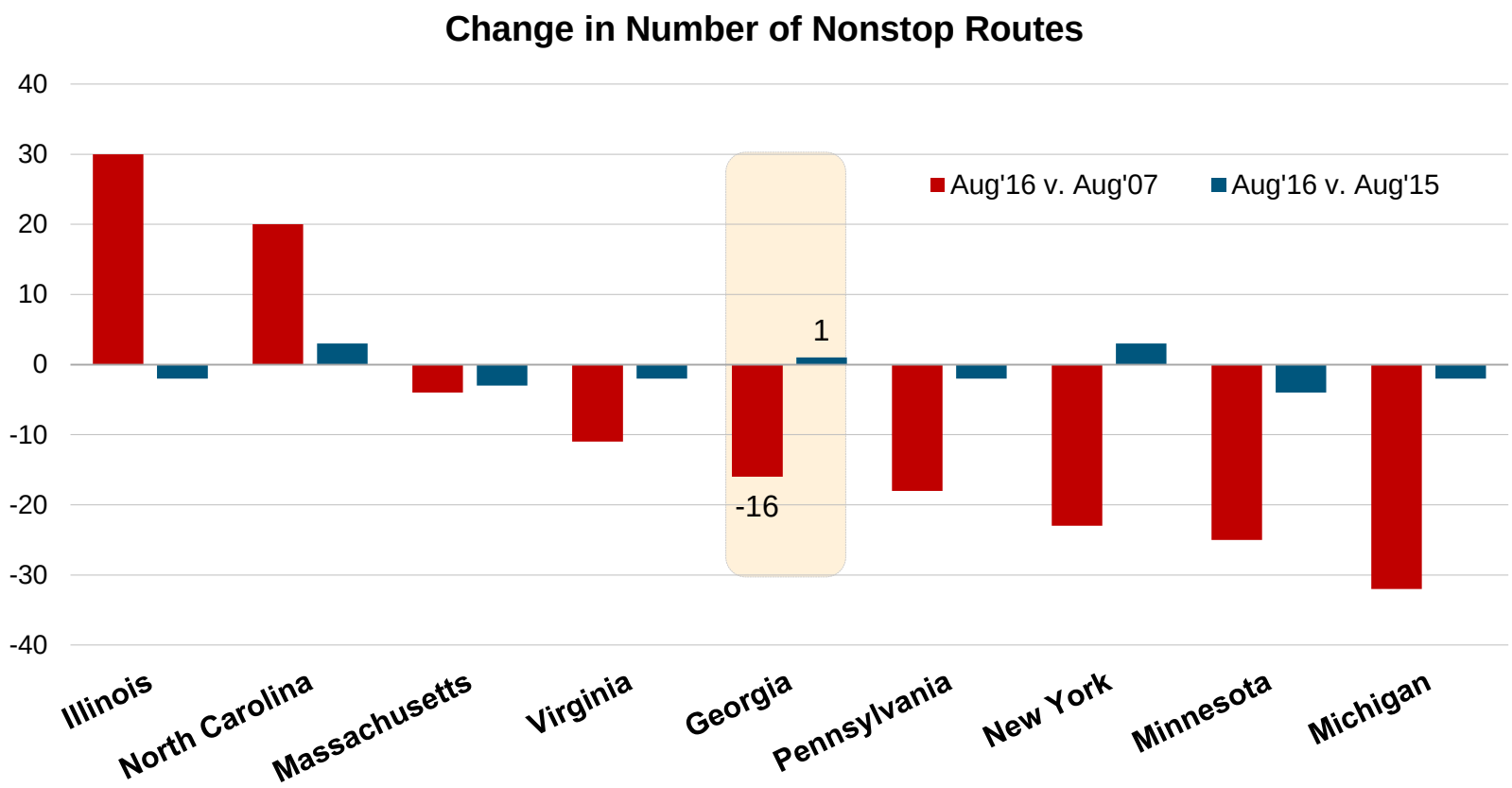
Atlanta is Responsible for All the Routes Lost Since 2007



Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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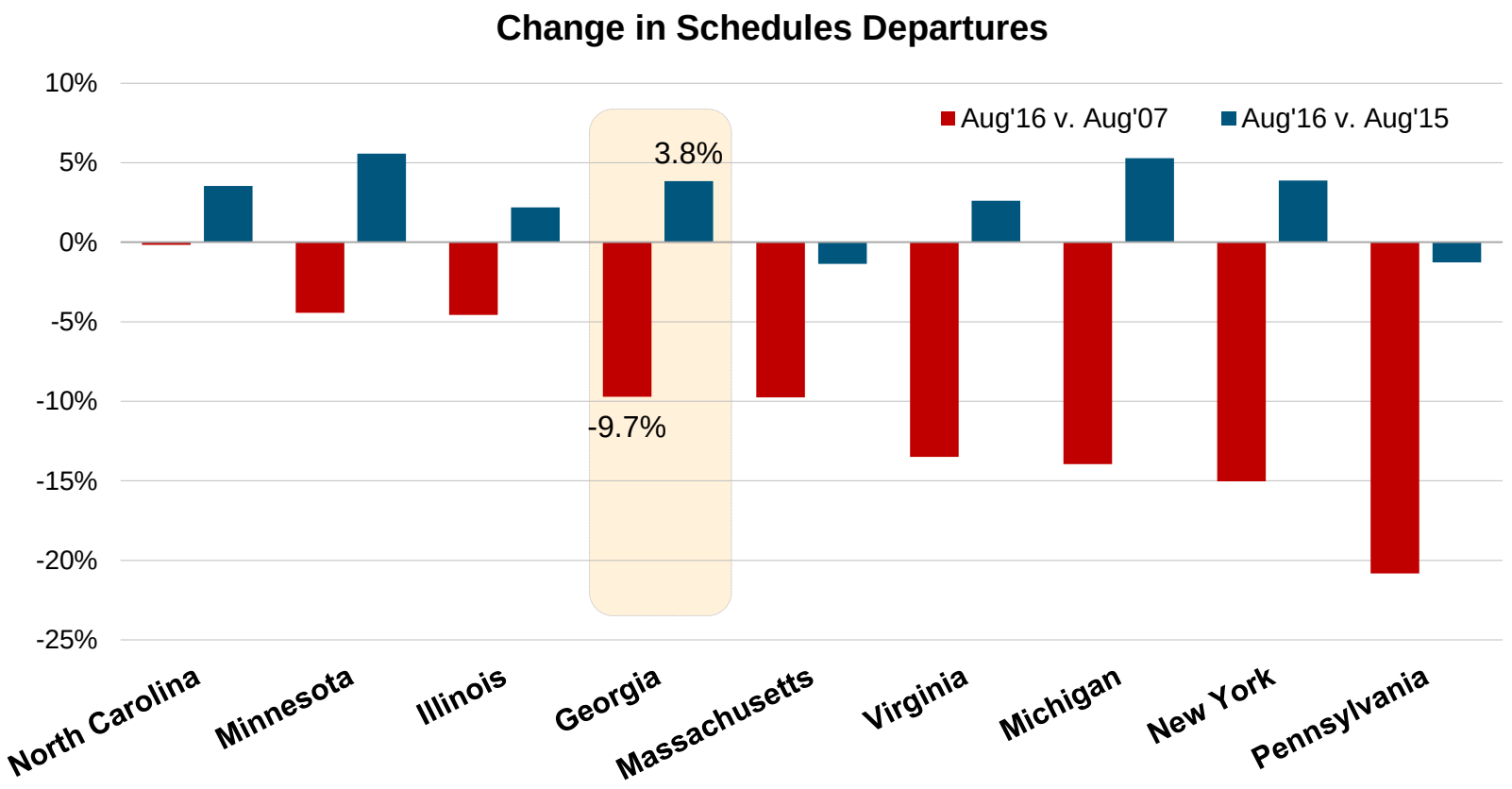
While Improving, Georgia's Absolute Number Of Departures Has Not Improved To Pre-Recession Levels



Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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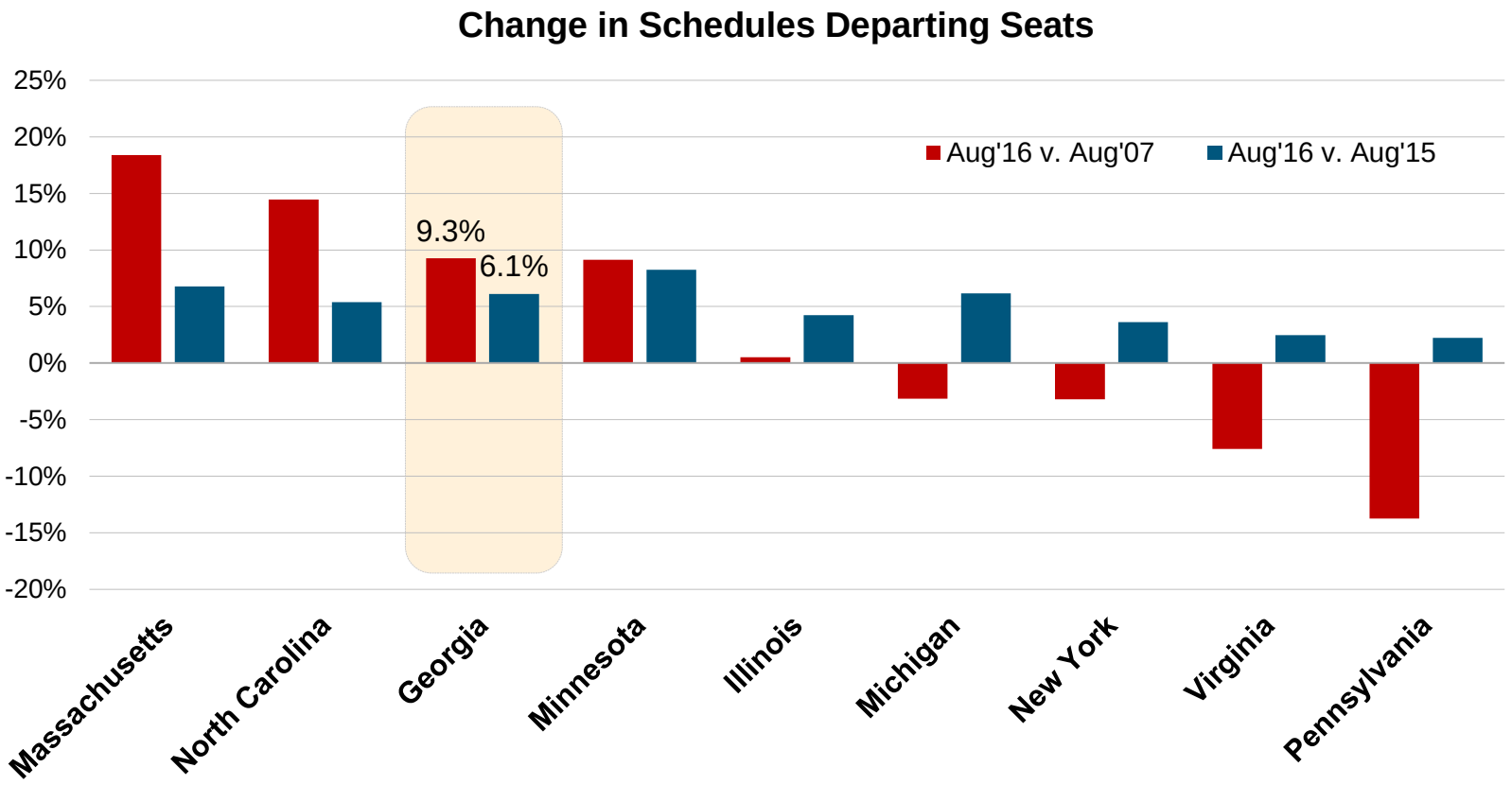
However, The Number of Departing Seats Is Up



Source: Inter*VISTAS* analysis of Innovata schedules, via Diio online portal.

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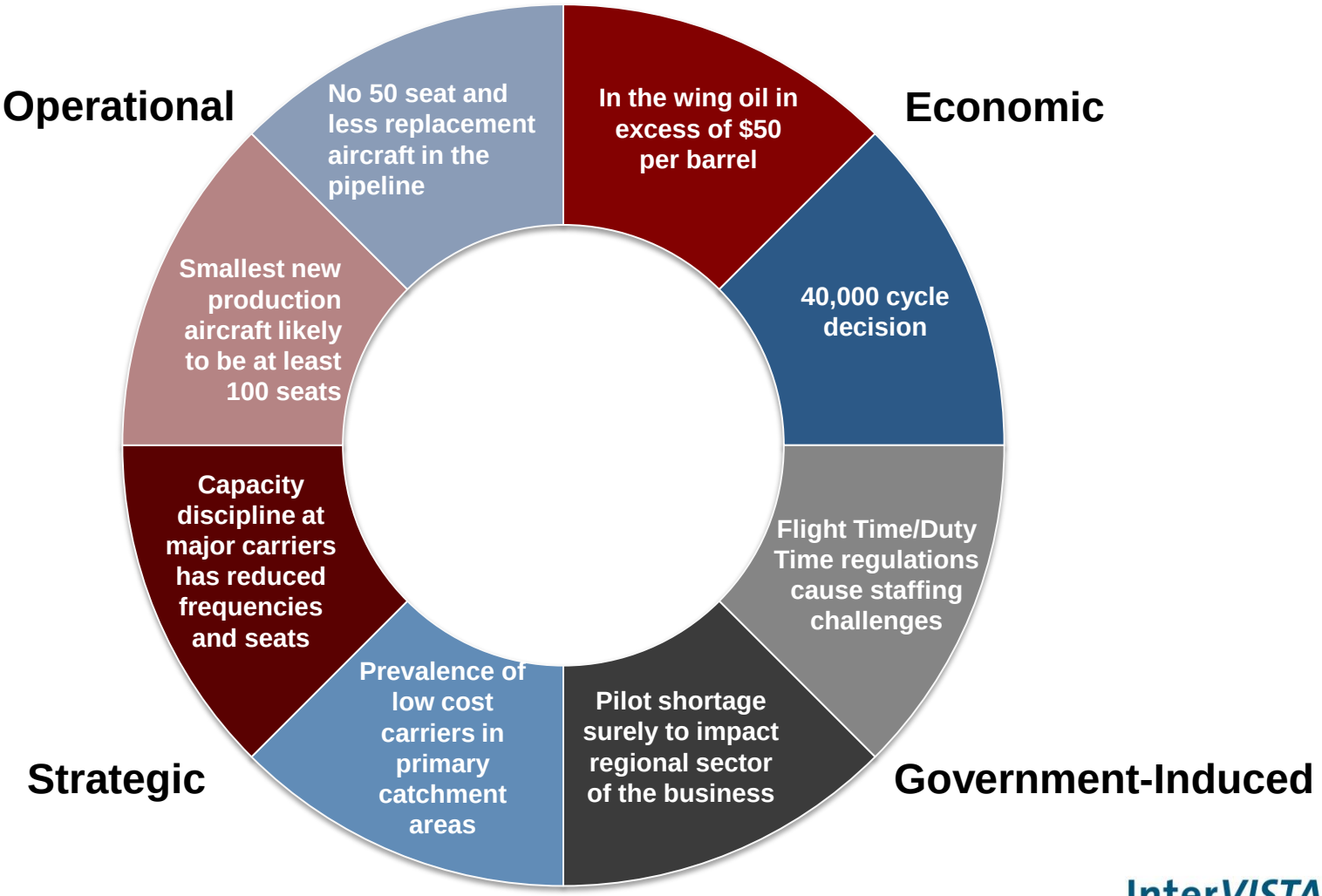
9. ARE MORE SERVICE CUTS AHEAD?

The virtuous circle of air service challenges for small U.S. airports.



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10. WELL THEN …. WHAT ABOUT TOMORROW WITH NO PILOTS AND NO SMALL JETS

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NATURE ABHORS A VACUUM

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